

1. Although light is the input to 80% of our brain sound is what makes the difference. The harder disc and input and not all sounds

SOUND - LANGUAGE - INFORMATION

Even his songbirds talked about ~~life & death~~

Aerodynamics
Shiny became medium of information transfer
and also shadow.

2. Now Look AT SOUND

The questions here

... Ideas -
Physics who all make sound

3.

Flin

Leaf hoppers

beetles that lay

Brook

Whales

Dolphin

monkeys

Elephant &

Rhino

INFRAS

man

Show Dupuis the

(MLL DO) THINKING PHYSICS / FORMATION & D BRIAN
A DM house
BIRD & Cuckoo

Simplest Case

- Propagation of Sound in one dimension

An object is moved at one place in Air

disturbance in Air - motion of object change
of pressure - if motion rapid enough -

change of pressure pushes additional Air - in
air in turn is compressed which in turn
leads to extra pressure and a wave propagates

Variables

Displacement, pressure, velocity, acceleration
source for p wavefront

- in one dimension is

4) Planar

The displacement $\neq X$ depends
only on x and t , and not y & z
descrip. \sim $X(x, t)$ - clear

that we describe gas beh. by
Eulerian 47-3 ... 4.5

$$\frac{\partial^2 X}{\partial t^2} = v^2 f''(x-vt) \quad c_s = \sqrt{\frac{R}{\rho}} = \left(\frac{\partial P}{\partial \rho} \right)_0^{1/2}$$

$$\frac{\partial^2 P}{\partial t^2} = \text{const. } \rho \quad \text{so } c_s^2 = \frac{\partial P}{\rho} \cdot \frac{\partial K \Gamma}{m} = \frac{\partial R \Gamma}{\mu}$$

(μ = molecular wt; m = mass / molecule)

$$PV = NkT$$

Sound Contrasts with light:

1. No sound reaches from the stars
- although what Mallie said about all forms of energy is true. (in immediate generation is right here in sound.)
2. No chemistry - no botany -
no microbiology
3. To imagine being deaf. Not being able to enjoy music or speech.
Only with a lot of training would one be able to speak, or whereas one could speak at all as croaky or even speak at all as croaky much else. One half of life would not exist, (in other perils) - these thoughts make you aware of the functions of hearing and how (in ordinary word reading) sound of enormous variety (in hum (far)) (in buzz (fly)) (in whistle (teakettle))

All have names be cause they are
(humphreys) some subtle combinations
distinguishable. You \downarrow kettle &
my (kettle) who is talking to who
in his next room.

That brings us to two

things

of all the people you know
how many you would not really
identify by their voice?
I'm in contact & voice - speech.
It is remarkable that
such a huge variety of differences
exist and when more ^{that} signals from the ear
in brain can distinguish
amongst them

Compared to light
I may say ^(smaller) serves long
distance (postman) when he
communicates by a carrier (Schrein)

light I only some truly and
interesting. Pickins are reflection -
Sound has such variety - ability
Sound is used like light say for
sound of objects - his world view
may be even more prettier.

Meaning: Do they tell us something?
what do they mean to us?
at night a buzzing fly / mosquito
may irritate you to
the point where you drop
everything and set to swat the
pest
fan lawnmower, boss's cheap
around his carra. It informs
you of his words around especially
met part which your other sense
cannot reach. Sound can

arouse emotions etc (and
much is learnt thru association)

AS I Speak of Sound
Informing you notice what
in Schopenhauer's view, what whether
responding now or learning
About & earlier - then well,
also, sounds - what's other
sounds around - You "simply"
do not listen to me
Simply!!

If it really so
Simple to hear the sound
that for some reason
interests you amid a host
of others of him louder?

The 'party' situation'

Room full of people
talking, singing shouting
all together in groups. Yet
you can listen easily to
being told by someone
a joke
in your right ear next
moment also 'switch' to
muffle of a silk screen or
hi left ear. Your ears were
in head. Some sound but
such hi some
you directed your attention. If
a tape recording was made

at exactly the same point
in space & time & you
would never
hear it, you would never
make out a hiss. You
will not be able to
direct your attention to
anywhere but you (o holosceles)
which now produces a garbled
noisy "listening"

is not as simple.

We have obviously
called the about human -
Bugs - cats, dogs also hear
- how much this and
how well among them would
be a question.

What sounds they hear
and how do they react to
them (what is the "meaning")

[Dasanne - Pomeranian]

Stay]. Cows & | Grows ^M
~~Milkman~~ | Ladle tap
Sound associated with cows in Pomerania

~~but spreading in his sound WORM
MAYPIE ROBIN - CUCKOO WEDDING WINE~~

Bat ^{the reflected sound} (hunting
for food)

(feels about food. ("hunting
by ear")) - Bats even

trained to distinguish objects
by reflecting smell. So we can
make out. But

they can make out. But
do their food "sound"

appetizing! (like how "smells"
w' looks').

Communication.

1st level For most animals
Sound is the major form of communication (second by touch)
"talk" is "hear" (transmit & receive). It is long distance.

2nd level (shaded) When forest density
Population is Magpie - their
males & females
probably meet each other
wanting to view distance. They
will never have to enter a
sound, but on the other hand
they will stake out "territories"
by proclaim loudly.

TB (in 6th) ♂ - hi

Song informs hi of his
~~Rival~~, his strength and
(or see weakness) & what
chances he has to win over
challenge him. Mon-males used
keep of him. By hi
locken most of wall
Same meaning he
keep of of AD
For he is an and
Same. From it reads like
Bachelor of means good
akigen achi large home who
offers protection - apply in
person. "

Can have song
such as. Song & new
is communication
emotion

Communication : first among

in songs exclusively to
convey Anger, fear, joy
subject - human & emotions
(although there are 6 human
types - some songs). In
human his form of communication
has reached its pinnacle
as he form of language
and here can be
seen his best work.

Cele Communication

This is Radioaves: wonder how it speaks
Kilowatt power reaches all over
the place travel miles away; but it
is not always direct to

Know but a low Sun can be
less than 1000 miles
away. (Leave alone has
reaching Sun any in Sand a m
mochletu).

Rome of Socrates Power

MARCUS VITRUVIUS POLLIO

— Roman architect pictured

Sounds \approx material flow going
out in expanding spheres

for a Sun.
A sphere in a mist will
have spread much more

It may be a 12 foot sphere.

When he was
six feet away from a

buzzing fly with $\frac{1}{300,000}$ fly power

\Rightarrow Compare puzzle we fly
horse power car seems ordn
100 watt bulb looks very less
100 watt full but a 100 watt
amplifier bold rock in house
In fact a low amplifier makes
more sound in the car. It is
in average it is difficult
to imagine how much

to hear $\frac{1}{2000}$ miles away. But this
is a figure expressive of
human hearing is in range.

Weber: When you look at
objects (at constant distance)

A CONSTANT RATIO

One shade has 12 S.I. tones but
weber law states that fractional

difference is more important in
differences magnitudes) Similar like

Sound in Jenson

Fechner said that
went up a constant amount when
power went up by a constant factor

Rahs & debsen (See p. 10)

Generalization

Sound is immediately

vibration:

associated with

nature) Sound waves

compression in an elastic

medium \Rightarrow

(Leave 6
unwritten)

1. TELL ME WHAT IS
SOUND WITHOUT SAYING
WHAT WE HEAR BY EARS

(No Problem SAYING
VISION, LIGHT. . .)

WHAT

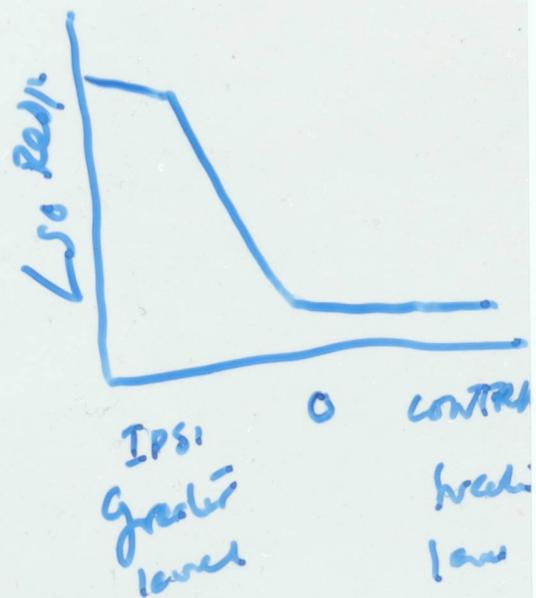
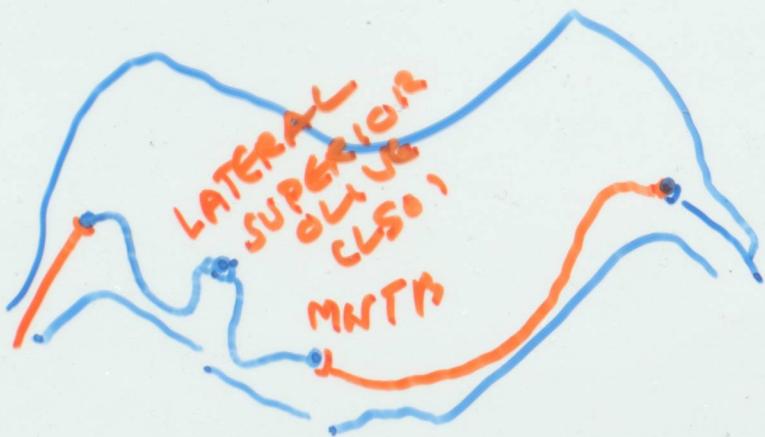
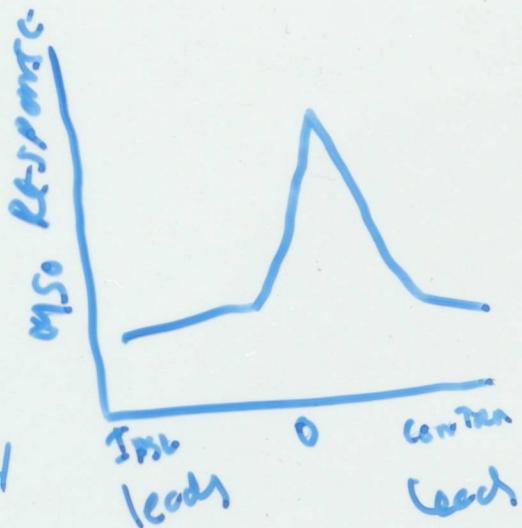
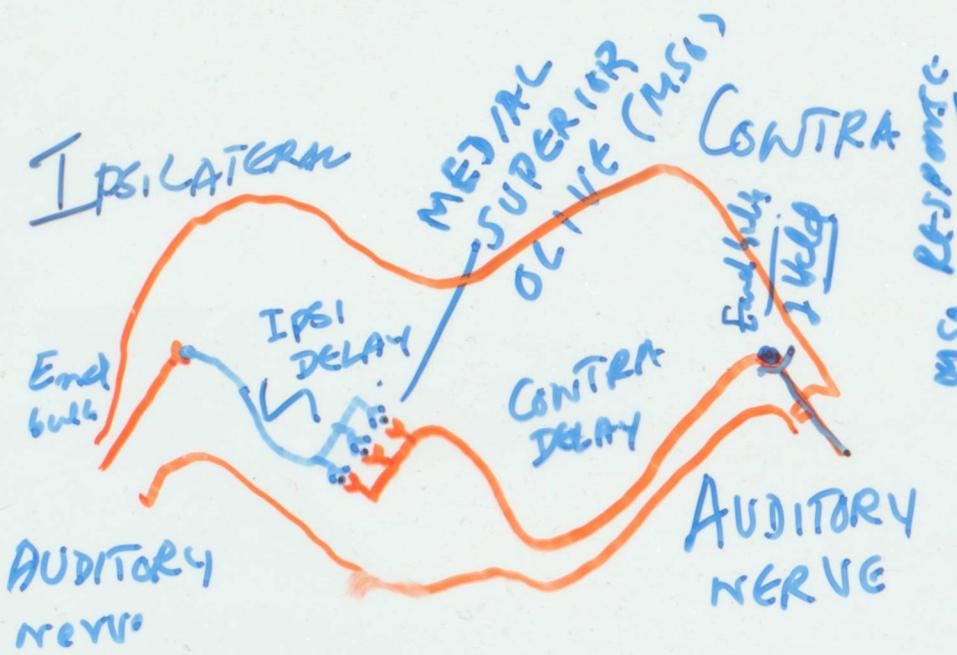
WHO

WHERE

HOW

—

Oscillations - WAVES



MEDIAL
NUCLEUS
OF TRAPEZOID
BODY

Mso Responds only when (or prob)
that a

1. { SOUND ... Physics
STRUCTURE OF SOUND

2. { ORGANS ... & ORGAN PIPES
... MAKING OF SOUND

3. SENSE & SENSIBILITY

PERCIEVING.

VIDEO 1

4. MEANING & CONTENT

ANALYSIS ..

VIDEO 2

5. SOUND OF MUSIC
&.. ASPECTS OF HUMAN
HEARING

6. ✓ SINGING IN THE RAIN - I

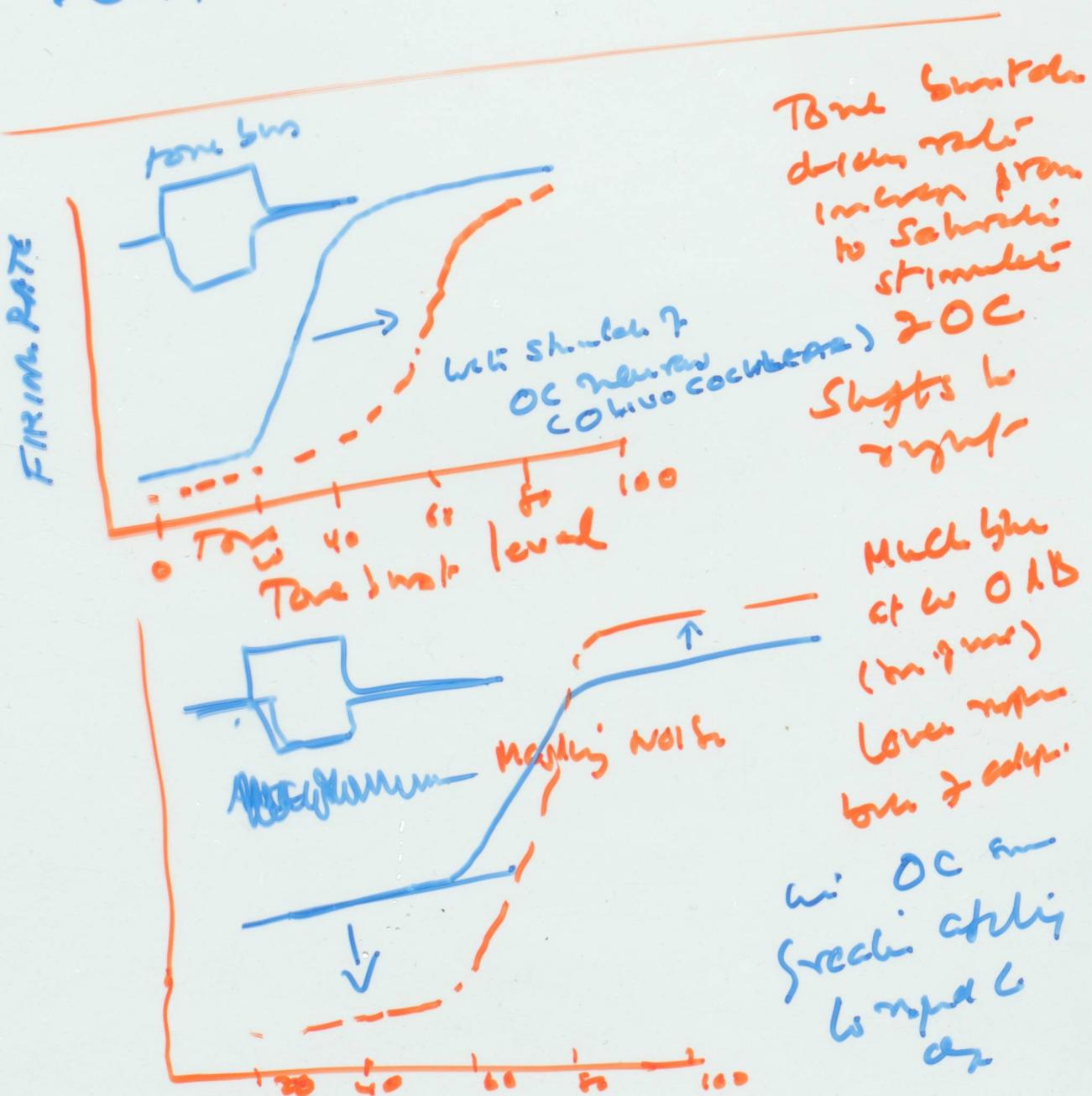
BIRD SONGS

7. { SINGING AND DANCING
IN THE RAIN
OF CRICKETS & OTHERS

8. ^{DL} MOLECULAR SOUND
MORE VIDEO - 2 + DISCUSSION

MASKING: involves adaptation
and suppression. β and δD
"line bias" or refractory properties

Adaptation happens at hair-cell.
Since there's
- more synapt.
little adaptation + receptive field



~~228~~ f not
1-7 E⁹ not
Neuron (1997)

19 (5) 947-520 new

Ann Rev Cell Biol (1988)

~~576~~ 3(047-1)
100078

4 - 83-92 not

~~Curv opimam in Neurology~~ 8(4) 1998
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